

tnrc." He advances no novelty; but the description which he gives seems to us to be as clear and succinct as it can be made. All confusion and unnecessary multiplication of terms are avoided; and the accompanying drawings are very beautifully executed, and constitute really illustrations of the text and of nature.

But, in order to exhibit more fully, and from many points of view, the subject in question, we are favoured with another chapter, which unfolds the mode of origin and progress of femoral hernia, together with its diagnosis, the tactics, and the operation.

In concluding our cursory notice of the contents of the third part of Mr. Macleise's work, we must again express our satisfaction at the manner in which the author has treated the subject of hernia. His commentary is simple and to the point, and the drawings with which he illustrates nature are exceedingly well designed for his purpose, and many of them are, if we are not mistaken, original with the author.

F. W. S.

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ART. XV.—*A Treatise on the Pathology, Diagnosis, and Treatment of Neuroma.*

By ROBERT W. SMITH, M. D., T. C. D., M. R. I. A. Folio, pp. 30, with plates. Duhlin: Hodges and Smith, 1849.

THE pathology of the nervous system is probably more difficult of investigation, as well as less understood, than that of any other branch of special pathology; yet it is not, surely, one of the least important. It is therefore a subject of congratulation, among all who are at all interested in this study, that Mr. Smith has directed his attention to it, since they have a right to entertain the most confident hopes that the patient and well-conducted observations, with the integrity of purpose and of judgment, which have thrown so much light upon other subjects of surgical inquiry, will also elucidate this.

In the British medical journals, and in the reports of the transactions of medical societies in Great Britain, records of cases of neuroma may be found, and valuable essays upon this subject; but we believe that this volume of Mr. Smith is the only monograph on this singular affection in our language. The German and French, however, have been more prolific. Mr. Smith's work is the result of his own personal investigations of cases of the disease, and of a careful examination of the contributions of others, of which he gives an elaborate enumeration.

The term *Neuroma* seems to have been introduced into medical nomenclature by M. Odier, of Geneva, in the year 1803, and signifies a tumour connected with a nerve. In his discussion of the subject, Mr. Smith arranges neuromatous tumours in two classes: first, those which are idiopathic; and, secondly, those which are the result of wounds or other injuries of nerves. "Among the latter, may be included the tumours which form upon the extremities of nerves divided in amputations. In the *idiopathic* variety of the disease, there is, in general, but a single tumour, which, whether it be solid or composed of a cyst filled with fluid, is usually painful; but, when several such tumours exist, either upon the same or upon different nerves, they are, in most instances, solid, and free from pain. The *traumatic* varieties of neuroma, whether solid or fluid, are, in almost all cases, the source of severe suffering."

The general characters and symptoms of neuroma, of both varieties, are detailed at considerable length. The *idiopathic* neuromata are described as oval or oblong in shape, having their long axis in the direction of the nerve to which they are connected. In size, they vary from that of a pin's head to that of a melon, or even larger than this. There may be either one or many on the same nervous trunk; and they sometimes exist simultaneously on all the spinal nerves. They are rarely met with in the ganglionic system. "They are generally solid throughout; but, in some instances, they are composed of a cyst filled with fluid. They are of slow growth, but continue steadily to enlarge, although years may elapse before they attain such a size as to make them the source of inconvenience. They are movable in the transverse direction, but

not in the course of the trunk of the nerve upon which they are seated. Even when they have reached a very considerable size, they do not contract any adhesion to the investing integument, unless, from their situation, they are exposed to continued pressure. The skin is not discoloured, nor, unless the tumour be of unusual magnitude, do we ever see tortuous and dilated veins ramifying beneath it. They are not prone to attacks of inflammation, nor have I ever seen them suppurate, or known their removal by absorption. Desot, however, states that in one instance both the pain and the tumour disappeared spontaneously."

5. The pain of which the tumour is the seat is the most important feature. When the tumours are very numerous, they are not generally the source of much uneasiness to the patient; but the solitary neuroma is usually excessively painful. In some instances, there is little inconvenience while the parts are at rest, and the tumour not touched or pressed upon, or at most there is a sense of tingling or pricking running along the course of the nerve or its branches. In other cases, the pain is continued; but, in addition, the tumour is subject to paroxysms of anguish, occurring as a consequence of pressure or other mechanical irritation, or independently of such cause. During the exacerbations, the tumour seems to be in a state of erethism, and is exquisitely sensitive. Many observers contend that pressure upon the nerve above the tumour arrests the pain; and Mr. Smith calls attention to the fact that, in this variety of neuroma, the pain is generally limited to the parts below the tumour. Many cases are on record which show that general epileptic convulsions have been finally and completely arrested by the removal of neuromatous tumours which seemed to have been the starting-points of the disturbing influence; and, in connection with these observations, the advice of Dr. Craigie should be borne in mind by the practitioner, viz., to examine carefully the part from which the "*epileptic aura*" proceeds, as it may be the seat of a neuroma the removal of which may cure the disease. (*Edinburgh Medical and Surgical Journal*, xxix. p. 357.)

It has been supposed by many pathologists, by Bayle amongst others, that the neuroma is a cancerous growth. With reference to this interesting point, we will quote the following considerations, which induce Mr. Smith to agree with those who maintain the opposite opinion: "1. To whatever size the tumour may attain, or however long it may have existed, we do not find that it affects the surrounding tissues otherwise than by its pressure. It never converts them into a texture similar to itself. The form alone of the nervous trunk with which it is connected is altered, its component fibres being separated from each other and flattened. It contracts no intimate adhesions either to the contiguous textures or to the integuments, which can be freely moved even over the largest tumours; nor does it affect the lymphatic glands, either in the vicinity or at a distance."

"2. It does not exert that specific and destructive influence upon the constitution which forms so remarkable and so constant a feature in the history of cancer. It is true that the general health of the patient is frequently impaired; but this is to be ascribed, in such cases, to the continued suffering which he endures, and not to any specific reaction upon his system.

"3. The disease does not recur, after the removal of the tumour, either in the part originally affected or elsewhere. Whether the tumour, when of spontaneous origin, has been extirpated, or the operation of amputation been performed, the patient has been in every instance permanently relieved from suffering. How different is this result from the melancholy consequences of operations undertaken for the cure of malignant disease.

"4. The character of the pain which accompanies neuroma is totally different from that which characterizes cancer.

"5. The structure of neuroma, as revealed by the microscope, presents none of the characters which are supposed by modern pathologists to be diagnostic of malignant disease."

Concerning the etiology of the affection, the author says, "With the exception of the traumatic forms of the disease, I fear it must be confessed that we know nothing with certainty regarding the causes of neuroma. It may, in some instances, result from inflammation, while in others it may be owing to

an exudation of a specific character, the consequence of local congestion or irritation, as supposed by Knoblauch." He does not admit any connection between this disease and the rheumatic diathesis. "There are few affections of more frequent occurrence than rheumatism; few more rare than neuroma."

Mr. Smith describes the *anatomical characters* of neuroma as being very uniform. "The solid, idiopathic neuroma originates either in the cellular structure which connects the neurilemma to the trunk of the nerve, or within one of the smaller sheaths, by which each of the fibres, the aggregate of which constitutes the nervous trunk, is enveloped. In these two cases, the disposition of the nervous fibres upon the surface of the tumour, as also the coverings of the latter, is somewhat different. In the former, where the tumour originates in the neurilemma or its connecting cellular structure, we usually find that the nervous fibres, although flattened and increased in breadth, are not separated from each other so widely as in the latter. Supposing the tumour to be of the same size in each case, they are more confined to one surface of the tumour, generally its deep aspect; but when the neuroma originates in one of the central sheaths, it presses, as it grows, more equally upon the surrounding fibres, which are, in such cases, found more widely dispersed over the surface of the morbid growth. Again, in the latter case, the tumour, when large, is generally invested with a greater number of coverings than in the former. Its immediate capsulo is the sheath of the fibre where it has originated. External to this, we find a thin investment, formed by a condensation of the cellular tissue, which connects the general sheath to the trunk of the nerve. This sheath, or external neurilemma, forms the most superficial covering, with the exception, of course, of the subcutaneous cellular texture." The closeness of the connection between these different investing tunics, and the intimacy of the union between the tumour and its immediate envelop, differ very much. The capsule rarely undergoes any degeneration, but is smooth and glistening on both surfaces.

"A section of a neuroma usually discloses an exceedingly dense, homogeneous texture. The surface is smooth, of a grayish-white colour, and frequently the elasticity is such that the cut surface becomes convex. It seldom presents the same shade of colour as the nervous tissue. Its texture is essentially fibrous, or fibro-cellular, but so exceedingly close and dense that the unassisted eye can scarcely ever detect the course or arrangement of the fibres. In the majority of cases, the tumour is solid throughout, and everywhere presents the same appearance and an equal degree of density. Indeed, the uniformity of the aspect of the interior of neuromatous tumours is not one of their least remarkable features."

"When the tumour has attained a very large size (and, according to Mr. Smith, only in such cases), cavities occasionally form in its interior. They vary considerably in their dimensions, do not communicate with one another, and are lined by a distinct shining membrane, which, sometimes villous, is generally smooth. Some contain a serous fluid. In others, the contents resemble rather synovia or albumen, or may present the characters of purulent matter. Others, again, are filled with fibrin; and, finally, some are empty. The lining membrane, generally pale, is sometimes very vascular. But I have never seen, in any of the cavities of neuromatous tumours, fluid or coagulated blood, lardaceous or medullary matter, or any of the substances which are found in malignant tumours; nor have I ever known the neuroma itself, no matter how long it may have existed, or to whatever size it may have attained, assume the external characters or acquire the internal structure of cancerous or encephaloid growths."

"The trunk of the nerve immediately above and below the tumour is normal in appearance, and the intermediate portion is merely altered in form, and thrown out of its natural course; it either passes as a single trunk along the posterior or internal surface of the tumour, or else its separated fibres are dispersed over the surface of the neuroma. In a few instances, I have seen some of the nervous filaments enter the superior extremity of the tumour, although I was unable to trace them through it; but I have not yet met with any example of the passage of the entire trunk of the nerve through the neuroma, as is stated to happen occasionally." The author advises that the tumour and

the attached nerve be macerated in nitric acid before dissection, in order that the tissue may become firmer.

Concerning the diagnosis of this curious affection, the author thus expresses himself: "From what has been stated in the preceding pages respecting the symptoms and characters of painful neuromatous tumours, it is manifest that their diagnosis, although it may be occasionally obscure, is not in general attended with any very serious difficulty. The oval or oblong form of the tumour; its being movable from side to side, but not in the direction of the nerve upon which it is placed, the attempt to move it in the latter direction being productive of severe pain; its freedom from adhesion to the surrounding structures; the healthy condition of the integuments; the extraordinary sensibility of the tumour; the peculiar electric character of the pain, its terrible severity, paroxysmal type, and extension along the trunk and branches of the nerve, constitute a group of symptoms which, in the majority of cases, are sufficient to establish the true nature of the tumour."

The only method of treatment which can be relied on for effecting a permanent cure of the sufferings attendant upon neuromatous tumours is excision of the tumour. "It will therefore be sufficient," says Mr. Smith, "to consider what operation should be performed—should the portion of the nerve with which the tumour is connected be excised along with it?—is it in any case proper to dissect out the tumour from the nervous fibres among which it has grown?—or, finally, may cases occur in which it is justifiable to have recourse to the severe measure of amputation?"

To the first question, much space is devoted, detailing many of the remarkable cases in which both the tumour and a portion of the nerve have been removed, producing perfect cure, with the reacquisition in the parts supplied by the nerve of sensibility or voluntary motion. Mr. Smith calls attention to the fact that there remains, for a longer or shorter period, a peculiar coldness of the parts supplied by the branches of the divided nerve—a coldness felt by the patient and recognizable by others.

The second question is thus remarked upon: "The history of the treatment of neuromatous tumours supplies but few examples in which the second mode of operation to which I have alluded has been adopted. The results have not been very satisfactory, nor have they afforded much encouragement to the practice of dissecting out the tumour from the branches of the nerve, among which it is, as it were, entangled." And again, "It is, in my opinion, an operation which should only be performed when, from the peculiar circumstances of the case, it is impossible to have recourse to any other; for instances may undoubtedly occur in which the size of the tumour would render necessary the removal of so large a part of the principal nerve of the limb that a reasonable fear might be entertained of the occurrence of permanent paralysis or of gangrene (as happened in a case recorded by Swan); and, upon the other hand, the situation of the tumour may be such as to preclude the possibility of having recourse to amputation. Under such circumstances, the surgeon is justified in endeavouring to disengage a large painful neuromatous tumour from the nervous fibrillæ among which it is entangled."

Many cases are recorded in which the operation of amputation has been performed with success.

One section of Mr. Smith's book gives an account at length of the "*General development of neuromatous tumours*," embracing condensed notices of many cases in which "neuromatous tumours have been developed in almost countless numbers throughout the greater part of the nervous system—not only connected with the deep-seated trunks, but visible on almost every superficial nerve of the body; not limited to the extremities, but likewise involving the nerves of the great cavities; not confined to the cerebro-spinal, but also implicating the grand sympathetic system; not the seat of pain, but, on the contrary, the source of no apparent injury to the patient, unaccompanied by any lesion of innervation, even when such nerves as the vagus and the phrenic are involved from one extremity to the other." He then goes on to trace the histories of many such instances—very wonderful, indeed—but our limits will not permit us to follow him through this detail. Knoblauch is of the opinion that these

tumours are not the results of a morbid process, but of an original vice of conformation—that they are indeed true accessory ganglia. But the cases of the kind which Mr. Smith reports disprove such an idea; for in these the number of the tumours were seen to increase from time to time on the superficial nerves, and their interior structure was identical in those which affected the superficial parts, and in those which involved the nerves of the cavities; and they agree also in this respect with the accounts given by Knoblaueb. In none of them could any trace of nervous structure be detected.

The *ganglionic system* of nerves presents occasionally, though much less frequently than the cerebro-spinal, instances of the development of these tumours. But Mr. Smith observes that these enlargements generally consist in an hypertrophy of some of the elements of the ganglia, the fibrous, or the fibro-cellular, or the areolar.

Under the head of *Traumatic Neuroma*, the author embraces "all the varieties of the disease which arise from mechanical causes, such as wounds, blows, pressure, the irritation produced by a foreign body in contact with or lodged in a nerve, &c. In these cases, there is, in general, but one tumour, which is, in almost every instance, the source of severe suffering, the pain not being limited to the parts below the tumour, but frequently also extending along the trunk of the nerve towards its origin. This form of neuroma, when it is a consequence of a wound of the nerve, usually consists of a solid tumour, not invested by the neurilemma, and destitute of any distinct capsule. It is extremely apt to form when the entire of the nervous trunk has not been completely cut across, and in such cases appears to be more than usually painful."

The last point to which Mr. Smith devotes his attention is "*Neuroma succeeding to amputation.*" He thinks that the object of these enlargements, which form upon the extremities of nerves divided in amputation, and which are pretty constantly found, is to protect the nerves; and he thinks they rarely indeed give rise to any inconvenience. If, however, severe pain should be suffered, the tumour may be removed by excision, or, if not otherwise practicable, by amputation of the stump.

The plates connected with the volume are beautifully executed upon stone; they are very large, and present most astonishing illustrations of the numbers and dimensions of this kind of tumour. In every respect, this book must be considered as a very valuable contribution to English medical literature.

F. W. S.

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*Art. XVI.—On the Causes, Nature, and Treatment of Palsy and Apoplexy; of the Forms, Seats, Complications, and Morbid Relations of Paralytic and Apoplectic Diseases.* By JAMES COPLAND, M. D., F. R. S., etc. etc. etc. 12mo. pp. 326. Philadelphia: Lea and Blanchard, 1850.

A considerable part of this treatise is, confessedly, a republication from the author's *Dictionary of Practical Medicine*, while several of the chapters on the connection of paralytic and apoplectic seizures with other disorders formed the Croonian Lectures, for 1846 and 1847, at the Royal College of Physicians. In the present publication, the views of Dr. Copland on the pathology and treatment of apoplexy and palsy are presented in somewhat fuller detail, and in more intimate connection with one another, and with allied topics and related affections. They do not differ, however, from those previously advanced by him. They will be found, with few exceptions, to be based upon established doctrines in regard to the physiology and general pathology of the nervous system, and to be corroborated by the results of recent careful observations and clinical experience.

The order in which the subjects embraced in the treatise before us are considered is, first, the more simple and primary varieties of palsy; next, the uncomplicated forms of apoplexy; afterwards, the complicated states of palsy and apoplexy; their causes; the disorders which often precede them, and the more important points of their pathology; and, lastly, the treatment of their several forms and complications.